Lab Airflow Controls Trends and Selection

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History of Active Control in Labs

- Mid-Seventies brought the energy crisis and labs were recognized as large consumers of energy- early solutions consisted of two-position dampers.
- First Variable volume fume hood controls are marketed in early 80's
  - Controls utilizing both face velocity and sash position are introduced
  - Most exhaust systems are one hood, one fan
  - Often only the fume hood is addressed, not supply
- Supply and general exhaust controls are added in mid-80's and airflow controls become a "system", rather than a product.

History of Active Control in Labs (continued)

- Early 90's, Laboratory airflow controls become widely accepted and used in some form for most major projects. Sash based controls predominate.
- Mid 90's Laboratory airflow controls integrate more fully with BAS systems although most interfaces are hardwired.
- Mid 90's space temperature control is integrated into lab airflow manufacturer's specifications.
- Late 90's digital networking of lab control system into homogenous BAS becomes wide spread.

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Where are we now?

- Lab airflow controls are mature; some have even said “passé”
- Integration with the Building Auto-mation System is digital, complete, and seamless; *albeit a struggle at times*
- The hot topic has shifted from away from VAV hood controls to “Low Flow” hoods

Current State of Lab Airflow Controls

- Supplier base appears stable; few if any newcomers, no recent casualties.
- The majority of systems specified are sash position based. Why?
- It seems everyone is offering venturi valves! Why?
- Electric Actuation is a growing trend. Should you jump on board?
- Systems claim to be “Interoperable”; but which “standard” to choose?
- Where are the real innovations?

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Low Flow Hoods

- The Promise
  - Low air flow is intrinsic to their use and hence much of VAV's savings can be achieved without resorting to complicated controls
  - With Low Flow Hoods we can go back to the simple days of constant volume

Low Flow Hoods

- The Reality
  - The good ole constant volume days are over! Why can't we go back?
  - While low flow hoods might be appropriate for every lab, in some they may not save as much energy as is touted. Why not?

Products of the Future

- Adaptive Face Velocity Control, based on dynamic monitoring of hood leakage

So you're going to build a lab.....

- Putting the team together
- Evaluating the true impact of Low Flow Hoods
- Selecting a control approach
- Selecting a supplier
- Budget battles

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Thank you

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